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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Stripping/2017-18 13.04.2018

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Ashwathkatte surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/220/2017-18 Dated: 07.02.2018
Technical Reference	:	IS: 6241
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	13.04.2018

Type of binder	: 60/70
Percentage of binder used	: 5.00% by wt.
Total weight of aggregate	: 200 g
Total weight of binder	: 10.00 g
Temperature of water-bath	: 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.20	96.80
2	3.2		
3	3.3		

*Information is furnished by the Customer/Representative.

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Comments:

Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Sp_Wa/2017-18 13.04.2018

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Ashwathkatte surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/220/2017-18 Dated: 07.02.2018
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	13.04.2018

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2009	2010	2011	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1256	
4	Weight of saturated surface dry aggregate in air	W_3 g	2003	2005	2004	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	764	767	748	
6	Weight of oven dried aggregate	W_4 g	1997	1996	1994	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.614	2.602	2.666	2.627
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.635	2.633	2.702	2.657
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.45%	0.50%	0.42%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No: CTCE/BBMP/KRIDL/W.No.13/BC/Bitumen/2017-18 13.04.2018

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Ashwathkatte surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/220/2017-18 Dated: 07.02.2018
* Sample ID	:	Roads around ashwathkatte area in Mallasandra, Ward No.13
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	13.04.2018

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	470	469
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	30	31.00
7. Bitumen content in %age	6.00	6.20
Average	6.10	

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Job No: CTCE/BBMP/KRIDL/W.No.13/BC/Bitumen/2017-18 13.04.2018

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Ashwathkatte surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/220/2017-18 Dated: 07.02.2018
* Sample ID	:	Roads around ashwathkatte area in Mallasandra, Ward No.13
Technical Reference	:	IS 2386 and IRC:SP:11-1984
Date of Testing	:	13.04.2018

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	36.65	7.80	7.80	92.20	79-100
9.5	35.24	7.50	15.30	84.70	70-88
4.75	70.95	15.10	30.39	69.61	53-71
2.36	66.62	14.17	44.57	55.43	42-58
1.18	55.62	11.83	56.40	43.60	34-48
0.6	55.45	11.80	68.20	31.80	26-38
0.3	45.23	9.62	77.82	22.18	18-28
0.15	36.65	7.80	85.62	14.38	12-20
0.075	32.58	6.93	92.55	7.45	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19		0	0	100	100
13.2	32.28	6.88	6.88	93.12	79-100
9.5	38.25	8.16	15.04	84.96	70-88
4.75	66.62	14.20	29.24	70.76	53-71
2.36	76.35	16.28	45.52	54.48	42-58
1.18	65.25	13.91	59.43	40.57	34-48
0.6	62.32	13.29	72.72	27.28	26-38
0.3	33.26	7.09	79.81	20.19	18-28
0.15	25.6	5.46	85.27	14.73	12-20
0.075	35.26	7.52	92.79	7.21	4-10

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Agg/2017-18 13.04.2018

TEST REPORT ON GRADATION OF AGGREGATE

* **Customer** : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* **Agency** : **Technical Manager (West),** KRIDL, Bangalore.
* **Name of Work** : Improvements of asphalting at Ashwathkatte surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* **Reference** : BBMP/EE/DD/WO/220/2017-18 Dated: 07.02.2018
* **Sample ID** : Bituminous Concrete

Technical Reference : IS : 2386(Part -1)-1963 (RA-2011)

* **Type of Mix** : Hot mix plant, Bangalore

Date of Testing : 13.04.2018

Total Weight of Sample: **5200** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18
13.2	780	15.00	15.00	85.00	79 - 100	
9.5	580	11.15	26.15	73.85	70 - 88	
4.75	620	11.92	38.08	61.92	53 - 71	
2.36	600	11.54	49.62	50.38	42 - 58	
1.18	530	10.19	59.81	40.19	34 - 48	
0.600	540	10.38	70.19	29.81	26 - 38	
0.300	525	10.10	80.29	19.71	18 - 28	
0.150	300	5.77	86.06	13.94	12 - 20	
0.075	290	5.58	91.63	8.37	4 - 10	

Total Weight of Sample: **5300** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18
13.2	535	10.09	10.09	89.91	79 - 100	
9.5	650	12.26	22.36	77.64	70 - 88	
4.75	630	11.89	34.25	65.75	53 - 71	
2.36	590	11.13	45.38	54.62	42 - 58	
1.18	610	11.51	56.89	43.11	34 - 48	
0.600	550	10.38	67.26	32.74	26 - 38	
0.300	525	9.91	77.17	22.83	18 - 28	
0.150	365	6.89	84.06	15.94	12 - 20	
0.075	440	8.30	92.36	7.64	4 - 10	

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Stability/2017-18 13.04.2018

TEST REPORT ON MARSHALL STABILITY OF MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
*Name of the Work	:	Improvements of asphalting at Ashwathkatte surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	BBMP/EE/DD/WO/220/2017-18 Dated: 07.02.2018
* Source	:	Hot mix Plant, Bangalore
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	13.04.2018

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshall Stability (Kn at 60°C)	9.90	10.20	9 Kn (min)
2	Marshall flow (mm)	2.85	3.25	2 – 4
3	Voids in Compacted Mix %	3.30	4.1	3 – 6
4	Percent voids in Mineral Aggregate (VMA)	14.05	14.60	13 - 15
5	Percent Voids filled with Bitumen (VFB)	69.60	70.25	65 - 75
	Density, g/cc	2.29	2.30	--

Information is furnished by the Customer/Representative.

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ಪಶ್ಚಿಮ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಮಲ್ಲೇಶ್ವರ, ರಾಜ್ಯ. ರಮಣಮಹರ್ಷಿನಗರ, ಬೆಂಗಳೂರು

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